

A photograph of a wooden boardwalk bridge in a forest. The bridge is made of dark wood and has metal railings on both sides. It is covered with fallen brown leaves. In the distance, a couple is walking away from the camera. The woman is wearing a grey jacket and the man is wearing a blue jacket. They are holding a large white umbrella. The forest is dense with tall, thin trees and green foliage. The sky is overcast and misty.

# Waking Universities Up to Face the Future

Sandra Faber  
UCSC Emeriti Luncheon  
May 21, 2026

# A MESSAGE FROM COSMOLOGY

- *Earth can provide a livable home for at least **100 million years**, perhaps longer.*
- *We have been given the **gift of cosmic time**.*

**WILL WE USE WELL, OR WILL WE SQUANDER?**

**We are the first generation of human beings to realize and face this challenge.**

Three big questions we need to  
be talking about but aren't....

**What is this number?**

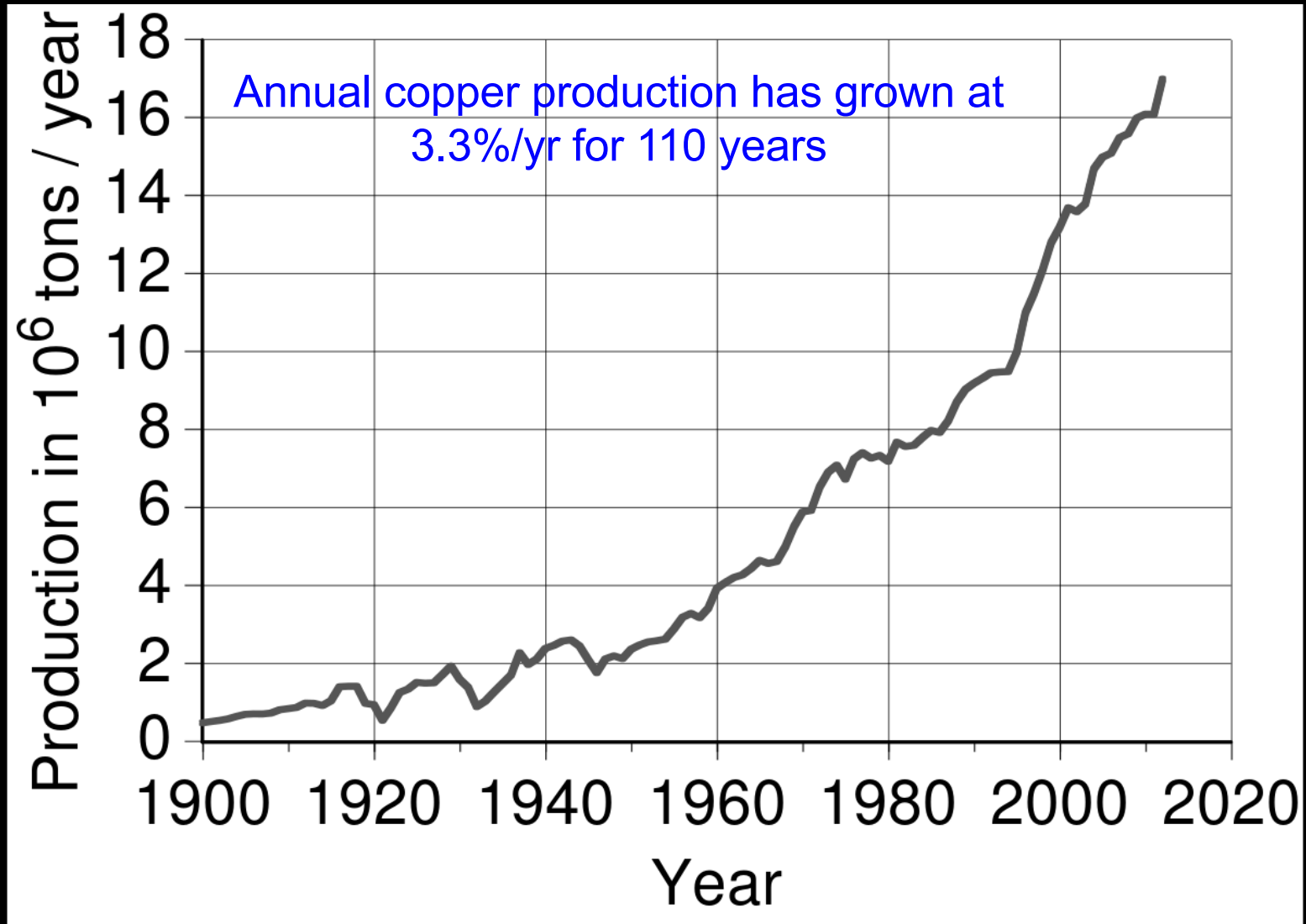
$$1.00000007 = ???$$

# What is this number?

$$1.00000007^{1,000,000} = 2$$

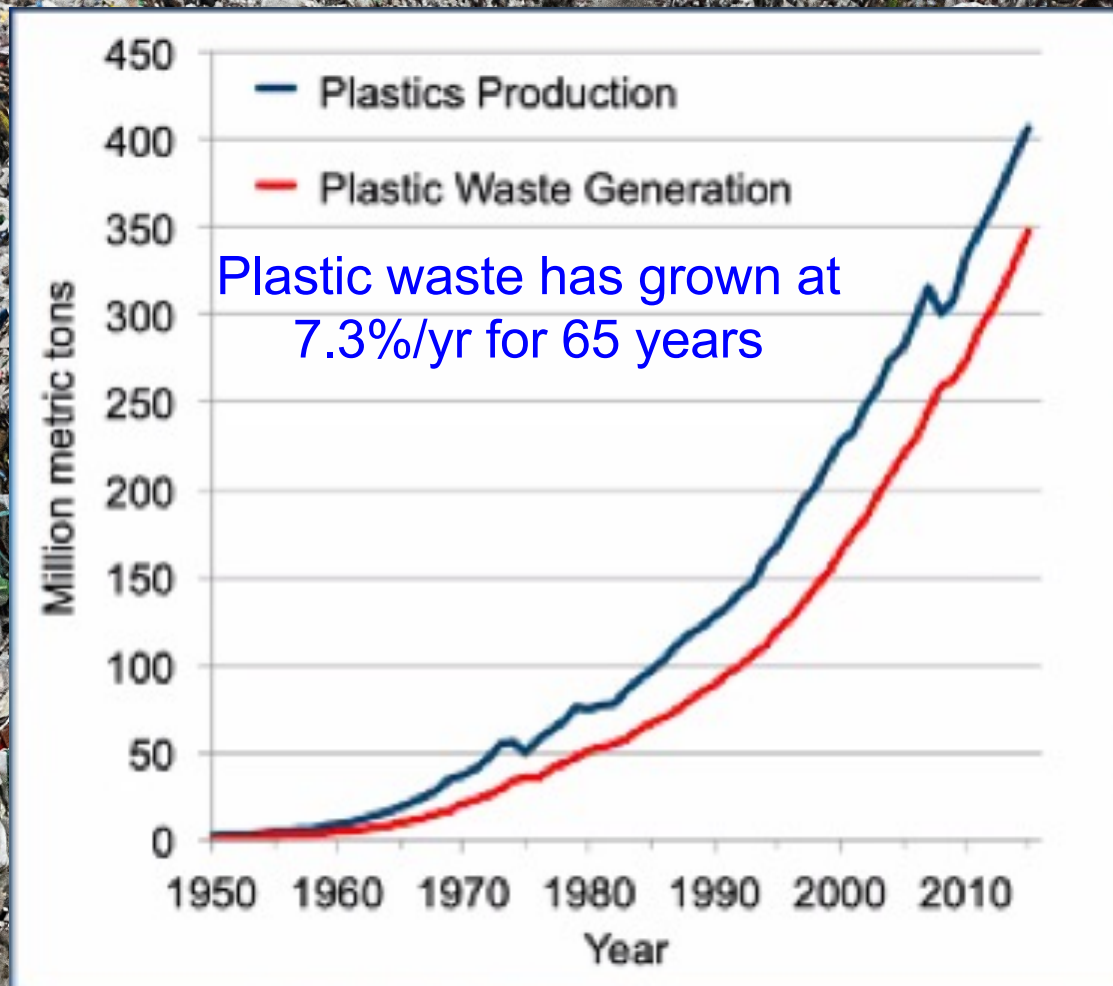
*The amount of annual growth if total growth in 1,000,000 years = x2*

Economic growth is tied to growth in physical resources.



Along with more growth comes more waste and pollution

## Annual Plastic Waste Generation



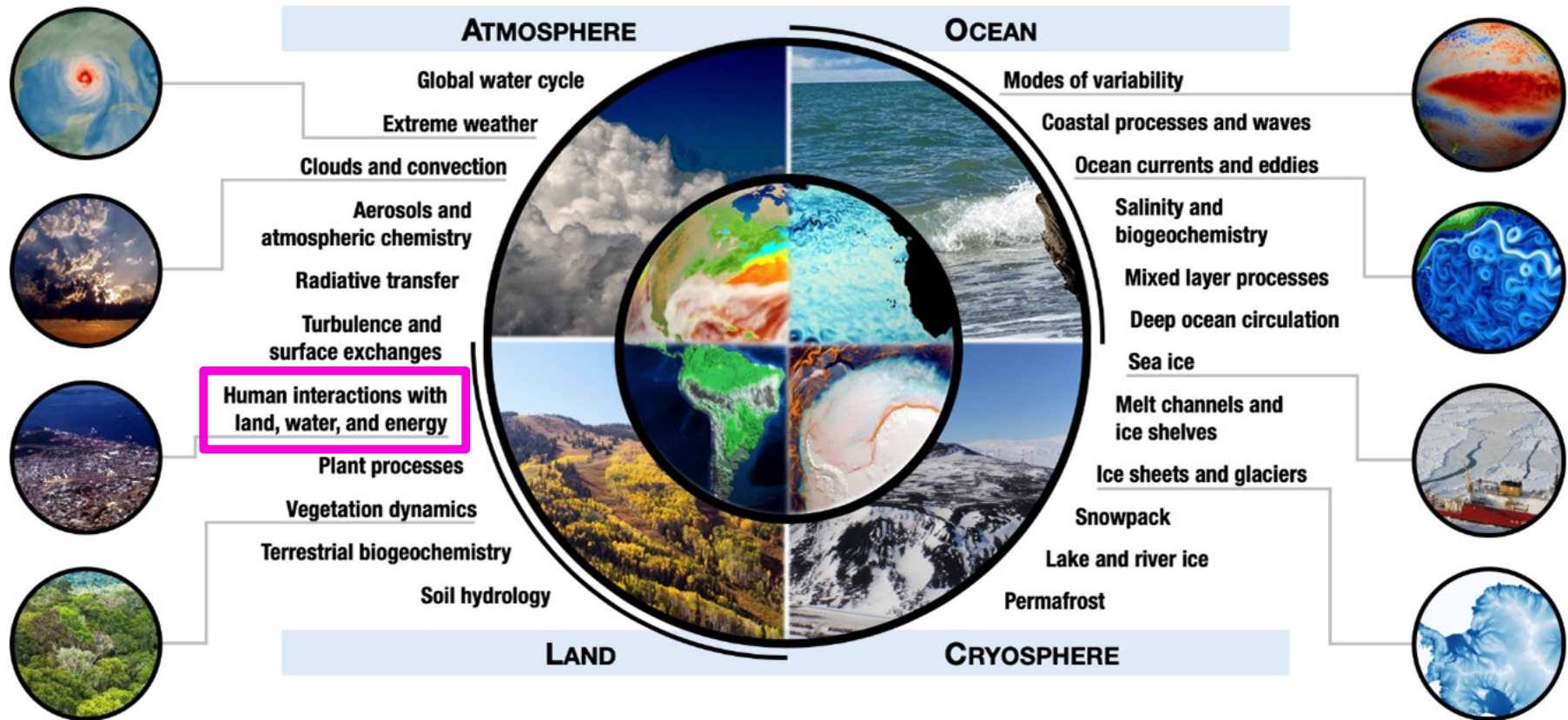
Geyer et al., *Sci. Adv.* 2017

**QUESTION ONE:** There is no global discussion on the limits of economic growth and what an alternative economy would look like

# Earth System Models



# The DOE Explains Earth System Models



**QUESTION TWO:** There is no shared global understanding of Earth as a system for harboring intelligent life:

-- The **instabilities** that are inherent in a complex socio-economic system and how to tame them

-- Earth's ultimate **carrying capacity** for human beings

# The Ethics of the Future



# Where Do Human Ethical Principles Come From?



# Where Do Human Ethical Principles Come From?

## AN EMERGING VIEW: EVOLUTIONARY ETHICS

*“Ethics” is simply shorthand for making tough decisions about conflicting “goods”. All species face this problem and have evolved their own ethical systems to support their particular “business plan”. Ethical systems have been honed by evolution, ours included.*

# How Do We Value the Future?

*Humans have a weak moral organ for the far future because having one was not necessary for our evolutionary success to this time.*

**QUESTION THREE:** There is no collective consensus on the origin of human ethics and its relation to planning Earth's future.

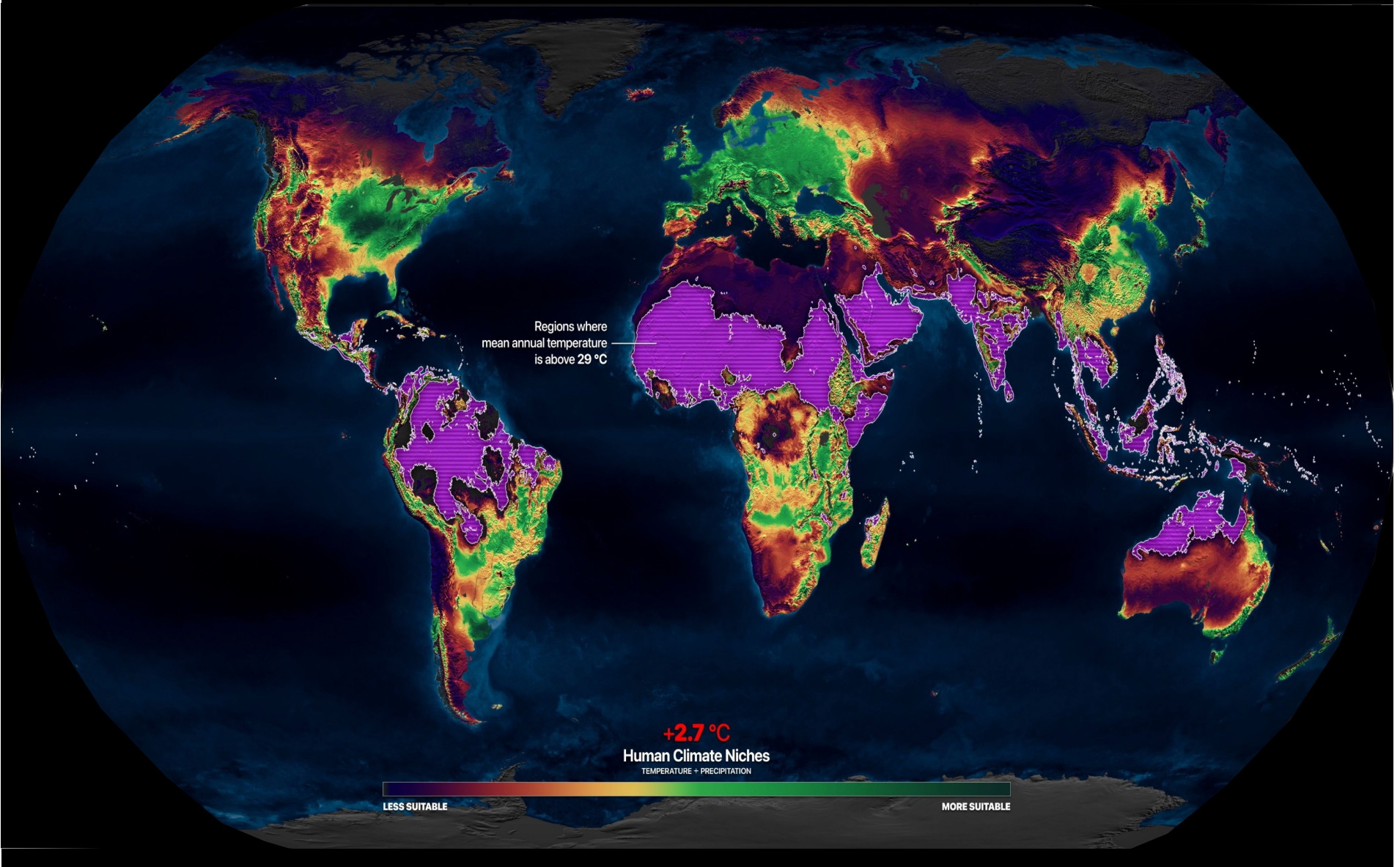
## 5 TRENDS TO WATCH

### *Global warming:*

- *3 °C is emerging as the most probable temperature rise by the end of this century.*
- *IPCC AR5 descriptions of a 3-degree world are vague and far removed from daily life.*
  - *“Category 5 hurricanes will become more frequent.”*
  - *“Many areas will experience more frequent droughts.”*
- *A rare exception: Tim Lenton and colleagues, “Quantifying the Human Cost of Global Warming”, Nature Sustainability, 2023.*

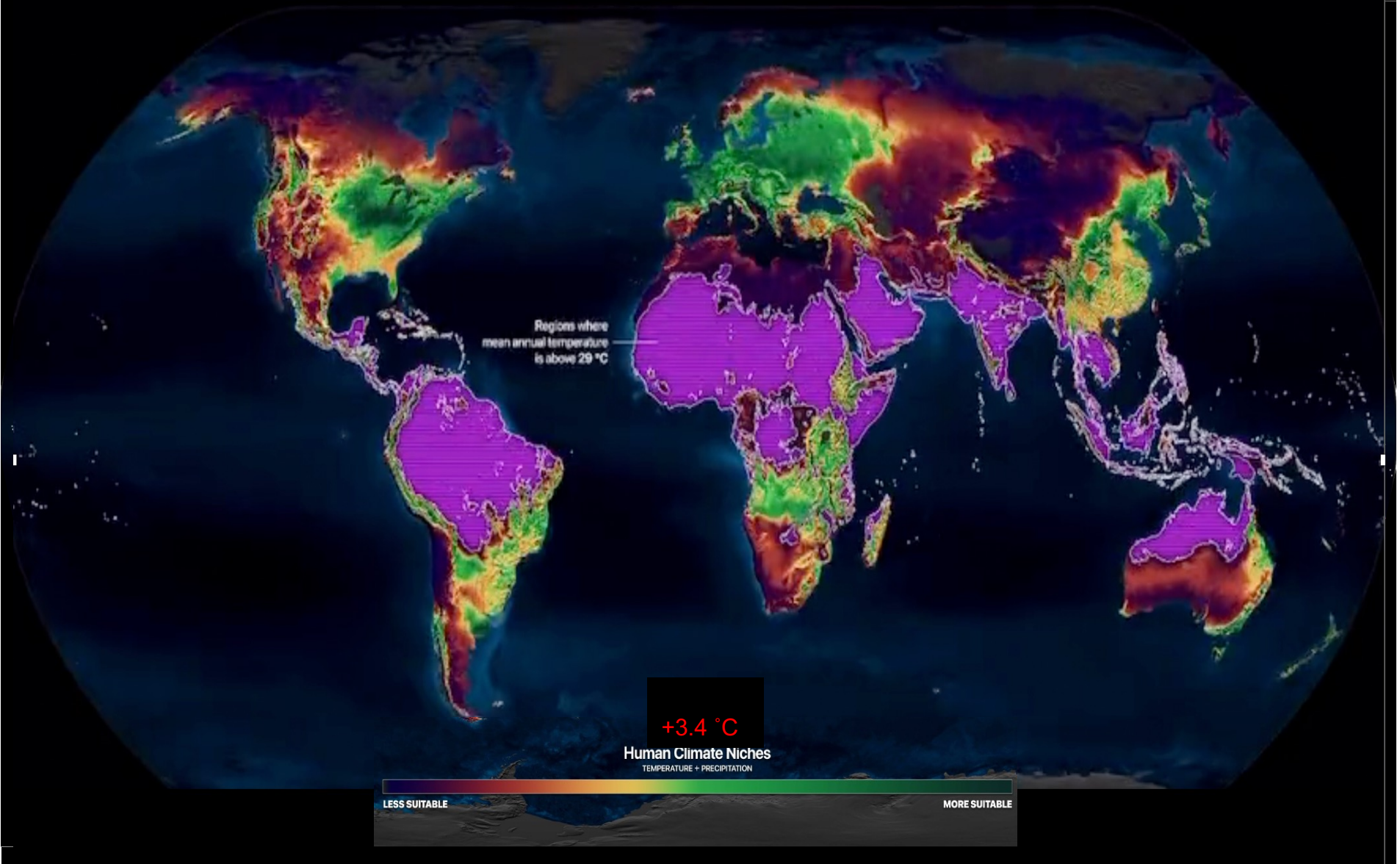
# Consequences for Human Habitability of Various Warmings

Lenton et al., <https://globaia.org/habitability>



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*At 3 °C, roughly 3 billion people will have to move or die.*



## 5 TRENDS TO WATCH

### *The amount and cost of energy:*

- *Modern society is based on cheap energy from fossil fuels*
- *Everything we take for granted – grocery stores, medical care, public sanitation – depends on having cheap energy*
- *Oil is essential for transportation, agriculture, mining, and chemicals*
- *Best guess: We are halfway through oil; lots of coal and gas are left*
- *Trends to watch:*
  - *Oil output of Permian basin: US shale boom peaking?*
  - *Will renewables significantly reduce total fossil fuel consumption?*
  - *The cost of energy and impact on inflation and standard of living*

*A novel thought: liberal human rights depend on cheap energy.*

## 5 TRENDS TO WATCH

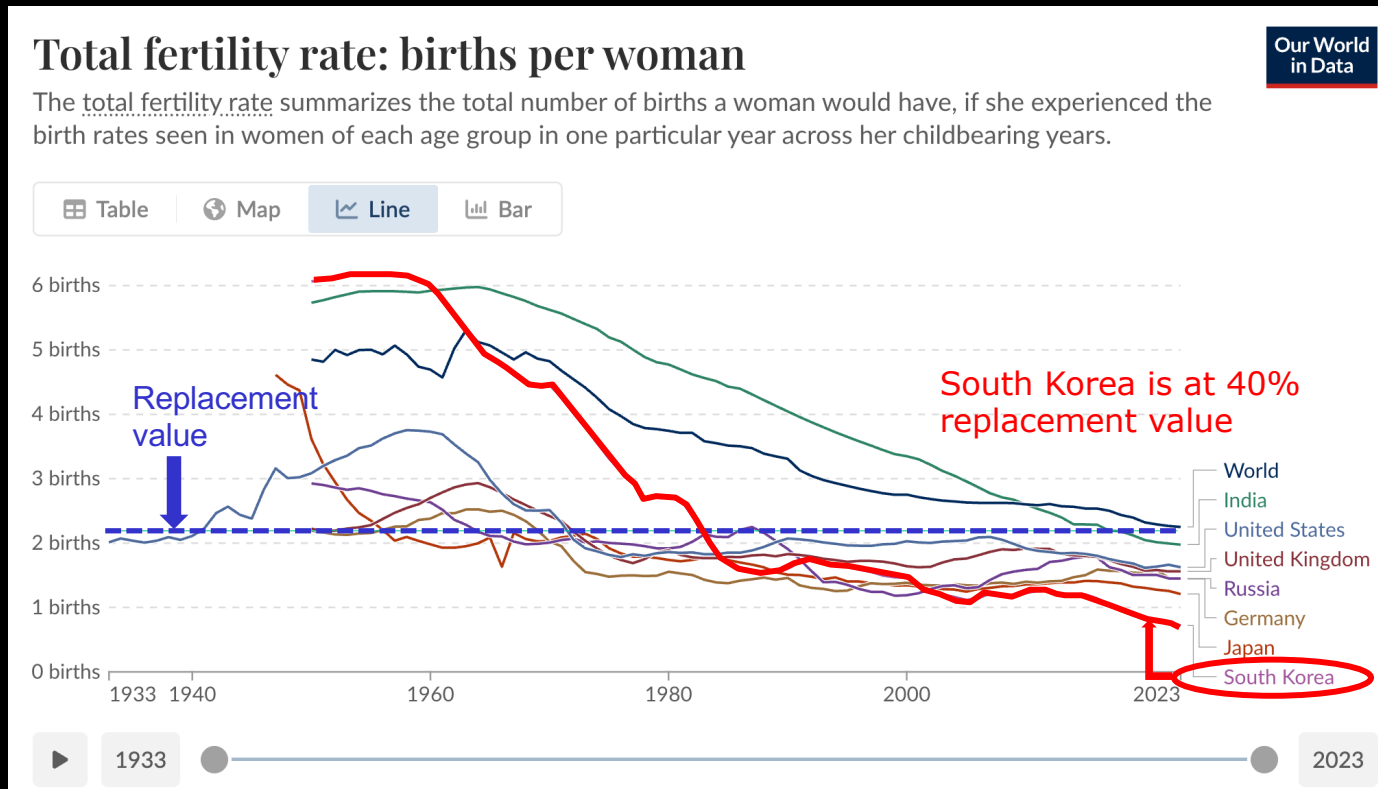
### *Dwindling renewable resources:*

- *Human consumption is limited by the rate that the planet can provide **renewable resources** like soil, fresh water, and CO2 removal*
- *We are currently in overdraft:*
  - *Soil depth is thinning: only 60 harvests left in Iowa*
  - *Long-term CA water supply: down by half*
  - *CO2 uptake of forests worldwide: zero in 100 years*
- *Factors like these set the ultimate carrying capacity of the planet*

*>> Population will decline*

# 5 TRENDS TO WATCH

## Human demographics, falling birth rates:



**Implications:** fewer people, vacant buildings, lower tax revenue, too many old people/too few workers, declining GDP, **capitalism cannot grow**

Ad in Wall Street  
Journal yesterday:

Infosys  
Navigate your next

# DON'T NAVIGATE AI ALONE.

Enterprise AI is a mountain where you can easily lose your way. Not anymore. Meet the expert guide who knows every inch of the terrain. He helps global business leaders navigate data, processes, and systems, and shows them how it all connects. He's here to help you unlock AI value.



[www.infosys.com](http://www.infosys.com)

This advertisement features AI-generated synthetic performers — digitally created human-like figures that do not represent any real person.

© 2026 Infosys Limited, Bengaluru, India

## 5 TRENDS TO WATCH

### *Artificial intelligence:*

- *An existential threat to humanity within a decade*  
*>> Humans go extinct or become enslaved*



Stuart Russell  
Computer Science  
UC Berkeley

### *Less dramatically:*

- *AI excels at pattern recognition and writing*  
*>> High-cognitive workers are replaced by AI*  
*(doctors, lawyers, journalists, teachers, professors)*
- *AI can write a PhD thesis as well as a human, in about an hour*  
*>> The end of human-executed science and scholarship*

# 5 TRENDS TO WATCH

## Artificial intelligence:

THE WALL STREET JOURNAL.

EDUCATION

### 'A' Grades Are Suddenly Everywhere Since the Arrival of ChatGPT

AI is accelerating grade inflation, research indicates, and making it harder for employers to assess new college graduates.

By [Lindsay Ellis](#)

May 13, 2026

Appeared in the May 14, 2026, print edition as 'Easy 'A's Are Everywhere Since ChatGPT's Debut'

**AI is destroying the integrity of our product**

TECH

### The American Rebellion Against AI Is Gaining Steam

Booed commencement speakers, blocked data centers, plummeting poll numbers: The fast-growing industry has a faster-growing crisis.

By [Amrith Ramkumar, I](#)

21 hours ago

Appeared in the May 20, 2026, print edition as 'Americans' AI Rebellion Grows, Fed by Energy Costs, Job Losses'

**Silver lining: students and higher ed may find common cause**

# US Higher Education Is Facing Severe Headwinds

## Worsening finances:

- Baumol's cost disease: human-intensive services lose out to automated services
- **Hollowing out of the middle class**
- Fewer students can afford
- Transfer payments dominate state and federal budgets -- compete for funds

In California: (amounts in \$ billions)

\* Not counting medical centers

	State budget	UC state	UC total*	HlthHumServ		UC tuition/fees	Med family income
1965	\$4.0	0.203	0.600	0.620		\$ 250	\$7700
2025	\$321	5.3	30.0	103.8		\$16,400	\$118,000
<b>Factor</b>	<b>80</b>	<b>26.5</b>	<b>50</b>	<b>167</b>		<b>65.6</b>	<b>15.3</b>

- Hollowing out of expensive full-time faculty: UCSC then and now

	Employees	Faculty	Students	Stud/fac ratio	% classes by lecturers
1972	1150	240	4631	19.3:1	5-10%
2025	4700	665	19000	28.6:1	33%
<b>Factor</b>	<b>4.1</b>	<b>2.8</b>	<b>4.1</b>	<b>1.5</b>	<b>~4</b>

- Reduced federal grants for basic research
- Bad future demographics: -11% fewer students in next decade

# US Higher Education Is Facing Severe Headwinds

## Waning public trust and support:

- **Not a bargain anymore:** Too many students → low salaries
  - UCSC Psychology BA's: median salary \$30.5 K, saturated local market
- **Crushing student loans;** long-term indebtedness
- Technology advances automatically – no university brains are needed
- Grade inflation makes it hard to tell if students are learning anything
- Declining trust in secular authority
  - COVID severely undermined trust in public medicine; all sciences are tarnished
  - Suspicion of authority (conservative right)
  - **Different values** (Christian evangelicals; Republicans vs Democrats)
- University work is unintelligible/inaccessible/irrelevant/unnecessary
- University jobs are too cushy, too secure. Professors are a privileged lot.
- **Universities are engines of increasing social stratification**
  - A meritocracy automatically creates an elite
  - Wealthy families prepare their students better
  - Talented students find talented mates and have talented children
  - DEI has favored some groups over others equally disadvantaged and deserving
  - Basket of deplorables
  - “It is the educated people who make the laws that keep me down.”

**And now there is AI...**

# A Brief History of the UCSC Earth Futures Institute

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## Founded in 2018-19:

- Stimulated by EVC Tromp's call for new wide-ranging campus strategic plan
- In parallel, a MRPI proposal in 2018 to create a UC systemwide Center for Origins and Deep Time (not funded)

## Themes and goals:

- To promote the flourishing of humanity on cosmic time
- Assist humanity to face the growing “metacrisis” – climate stress, energy scarcity, dwindling natural resources, environmental stresses
- Help higher education to survive, thrive, and serve society better

## Programs:

- **Frontier Fellowships:** ~6 undergraduate fellowships annually to do meaty, *interdisciplinary* research relevant to Earth's future – across all divisions
- **UCSC Climate Salons:** a regular colloquium series on climate, energy, etc.
- **The University Challenge Retreat:** ~17 deep thinkers visit Santa Cruz in October 2026 for a 3-day deep-dive into how universities can help society

# A Brief Overview of the UCSC Earth Futures Institute

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## Partners on campus: **we need more**

- UCSC Climate Action Now: a staff/faculty group interested in climate issues
- Osterbrock Graduate Leadership Program in Astronomy: leadership training for young PhDs
- With Baskin School of Engineering, co-hosted the conference “Climate Action in Higher Education”, at UCSC April 2024. Co-authored a white paper.

## External partners:

- Future of Life Institute: co-founded by UCSC Prof. Anthony Aguirre. Focus is on technological threats, AI, nuclear war
- Annual Reviews, Inc.: the future of scientific publishing and information management

## Collaborators and supporters:

- Loren Kinczel, chair of the UCSC Foundation Board
- Theresa Maldonado, UC Vice President for Research and Innovation
- Prof. Bahram Mobasher, UC Riverside: heads a small group at UCR with similar interests

# The University Challenge Retreat: A Fresh Look at Academic Research

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## Motivation:

- The world is hurtling towards climate disaster despite much university research.
- Climate is just one aspect of the larger, multi-faceted “metacrisis”.
- Metacrisis problems are panoramic, existential, and enduring.
  - >>> University research is siloed, superficial, and short term.
- Universities communicate with jargon, graphs, and tables.
  - >>> What the public needs is stories.
- Universities have not tried to craft realistic, coherent visions of the future.
  - >>> Lacking foresight, we train our students for today, not tomorrow.

# ***THE UNIVERSITY CHALLENGE RETREAT***

## ***Strategies to Galvanize Research and Teaching for a Safer Future***

**Purpose:** Maximize the power of university scholarship to address the metacrisis facing humanity

**Format:** ~ Seventeen invited scholars and practitioners, 3 days, intimate working retreat

**Location:** University of California, Santa Cruz, hosted by the UCSC Earth Futures Institute

**Time Frame:** October 2026

**Deliverables:** A set of actionable ideas to make university research and teaching more directly helpful to society, with strategies for implementation

**Launch:** Presentation and panel discussion on campus immediately following

**Follow-up:** A second follow-on retreat within one year focusing on California



*The retreat builds on...*

# Climate Action in Higher Education

## R O A D M A P

VERSION 1.0 - MARCH 6TH 2026

Findings and recommendations from workshops for academic leaders at University of California Santa Cruz April 2024 and July 2025

Sponsored by the Packard Foundation  
University of California Santa Cruz  
University of California Berkeley  
Harvard University

A conference and a workshop attended by decanel-level higher ed administrators.

Led by Alexie Leauthaud (Astronomy) and Anne Criss (Baskin SOE)

Broad focus: teaching, research, operations, community collaborations

Available online:  
Google: "climate action roadmap ucsc second nature"

# The University Challenge Retreat: A Fresh Look at Academic Research

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## The current state of play:

- We've conducted 40 hour-long interviews with potential participants.
- The interviews have been recorded and could be the basis of a book.
- Support for a retreat to improve university research is strong.
- Thus far, roughly 20 people have expressed interest in attending.
- We've applied to the Future of Life Institute to cover costs.

## A sampling of fields we are pursuing: **every division at UCSC has a role**

- Artificial intelligence
- Climate change, ecological disruption, migration, national security
- Agricultural, environmental, and resource economics
- Petroleum engineering, clean energy, mining, geoengineering
- Earth systems modeling, sustainability modeling, war-gaming
- International trade, venture capital, finance
- Organic farming, indigenous farming
- Science outreach, science communications, pedagogy, social media
- Ethics, values, human psychology, human happiness, valuing the future

# The University Challenge Retreat: A Fresh Look at Academic Research

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## Four questions:

- What does society most urgently need to know about the future?
- How can universities restructure their research and teaching to generate that?
- How can academic findings be conveyed to society to have real impact?
- How can universities be induced to change?

## **Day One: Scenario Building**

- Five “focusing” questions generate five 50-year “scenarios”
- What would society need to know to prepare for each one?
- What would a university need to do to study that question rigorously and in full?
- How would it communicate the findings ?

### **Sample focusing question:**

**I am a 35-year-old woman living in the US in 1975. Where do I go to give birth safely? How much does it cost me?**

## **Day Two: Synthesis and Structure**

- What overarching themes emerged from Day One? **>> Break down siloes!**
- How do universities need to reprioritize and reorganize?
- How would this new approach improve teaching now?

## **Day Three: Pathways to Change**

- Concrete proposals: meta-departments, new kinds of positions, new promotion and tenure protocols, new degree programs, new pedagogies
- How to fund?
- How to sell?

## **Day Four: Presentation and panel discussion at UCSC**

**Follow-up:** A second retreat focusing on California (within a year)

# *A Roadmap to Get Academia's Attention*

?????

**MASS  
MIGRATIONS?**

**THE END OF  
CHEAP OIL?**

**THE END OF  
CAPITALISM?**

**WAKE UP!  
ARTIFICIAL INTELLIGENCE  
AHEAD!**

# The University Challenge Retreat: A Fresh Look at Academic Research

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## Reaching out and inviting you to get involved:

- Advice and strategy → Executive committee for EFI
- Suggested retreat participants
- **Pilot retreat:** one day, early July, test-drive a scenario and rules of discussion
- Organize the campus presentation after the retreat
- Organize the follow-up California Challenge retreat
- Promulgate results: op-eds, podcast, presentations
- Build a network on campus
- How to organize and run a meta-department
- Introductions to important people